WHAT IS CLAIMED IS:

1. A fluid pump for pumping fluid, the fluid pump including:

a flow path;

a driver having:

a substantially tubular shaped body defining a body axis; and,

a number of elements circumferentially spaced around the body, each element being responsive to a signal to cause a corresponding portion of the body to expand or contract in a direction substantially parallel to the tube axis; and,

an urging member positioned in the flow path, the urging member being coupled to the driver such that selective expansion and/or contraction of the body causes the urging member to rotate, thereby urging fluid along the flow path in use.

2. A pump according to Claim 1, the elements being piezoelectric elements.

3. A pump according to Claim 1, the elements extending substantially along the length of the body.

4. A pump according to Claim 1, the body having a diameter of less than 0.1m, and having a length of less than 1m.

5. A pump according to Claim 2, the body being formed from piezoelectric material, each piezoelectric element being formed from:

a common electrode mounted on an inner surface of the body; and

a respective electrode mounted on an outer surface of the body.

6. A pump according to Claim 2, the body being formed from a double layered piezoelectric material, each piezoelectric element being formed from:

a common electrode positioned between the layers;

a first set of respective electrodes mounted on an inner surface of the body; and,

a second set of respective electrodes mounted on an outer surface of the body.

7. A pump according to Claim 5, each electrode being formed from a metal film having a thickness of less than 0.001m

8. A pump according to Claim 1, the pump further including a controller coupled to the elements, the controller being adapted to generate electrical signals thereby causing the selective expansion and contraction of the elements.

9. A pump according to Claim 8, the elements being arranged in pairs, each pair being positioned in circumferential opposition, the controller being adapted to generate electrical signals to thereby selectively activate an element pair such that one of the elements expands and the other element contracts.

10. A pump according to Claim 9, the controller being adapted to activate each element pair in turn, to thereby cause the elements to expand and contract in a circumferential sequence.

11. A pump according to Claim 9, the controller being adapted to generate signals having a selected frequency, the signals being applied to each element in the element pair having a phase difference of 180°.

12. A pump according to Claim 11, the controller being coupled to a DC power source to receive an input signal of up to 1000 V, the controller being adapted to generate signals of between 1 to 10000 V_{p-p} and a selected frequency of up to 40 MHz.

13. A pump according to Claim 1, the urging member including:

a shaft defining a shaft axis that extends along the flow path; and,

a blade extending radially from the shaft, the blade extending circumferentially around the shaft and along the shaft axis, such that rotation of the shaft causes the blade to urge fluid in a direction substantially parallel to the shaft axis.

14. A pump according to Claim 13, the blade extending along the shaft so as to define a thread, the pitch of the thread varying along the length of the shaft.

15. A pump according to Claim 13, the shaft being substantially tubular, and the blade extending radially inwardly toward the shaft axis.

16. A pump according to Claim 13, the shaft being substantially cylindrical, the blade extending radially outwardly from the shaft.

17. A pump according to Claim 13, the shaft being tapered.

18. A pump according to Claim 13, the urging member further including end caps for coupling the shaft to the driver.

19. A pump according to Claim 18, each end cap having a substantially frustroconical shape, having a cone angle of between 60° and 70°.

20. A pump according to Claim 18, the end caps being coupled to the shaft such that the end caps are urged against ends of the piezoelectric elements.

21. A pump according to Claim 18, at least one of the end caps being coupled to the shaft by a resilient member, the resilient member being adapted to urge the end cap against a respective end of the piezoelectric elements.

22. A pump according to Claim 21, the resilient member being a spring having a spring constant of between 0.005 and 0.02 kg/mm.

23. A pump according to Claim 1, the pump being adapted to be coupled to a circulatory system to pump blood.

24. A fluid pump for pumping fluid, the fluid pump including:

a flow path;

a driver having:

a substantially tubular shaped body defining a body axis; and,

a number of elements circumferentially spaced around the body, each element being responsive to a signal to cause a corresponding portion of the body to expand or contract in a direction substantially parallel to the tube axis, the driver being arranged in the flow path such that selective expansion and/or contraction of the body urges fluid along the flow path in use.

25. A pump according to Claim 24, the elements being piezoelectric elements.

26. A pump according to Claim 24, the elements extending substantially along the length of the body.

27. A pump according to Claim 24, the body having a diameter of less than 0.1m, and having a length of less than 1m.

28. A pump according to Claim 25, the body being formed from piezoelectric material, each piezoelectric element being formed from:

a common electrode mounted on an inner surface of the body; and

a respective electrode mounted on an outer surface of the body.

29. A pump according to Claim 28, the body being formed from a double layered piezoelectric material, each piezoelectric element being formed from:

a common electrode positioned between the layers;

a first set of respective electrodes mounted on an inner surface of the body; and,

a second set of respective electrodes mounted on an outer surface of the body.

30. A pump according to Claim 28, each electrode being formed from a metal film having a thickness of less than 0.001m

31. A pump according to Claim 24, the pump further including a controller coupled to the elements, the controller being adapted to generate electrical signals thereby causing the selective expansion and contraction of the elements.

32. A pump according to Claim 31, the elements being arranged in pairs, each pair being positioned in circumferential opposition, the controller being adapted to generate electrical signals to thereby selectively activate an element pair such that one of the elements expands and the other element contracts.

33. A pump according to Claim 32, the controller being adapted to activate each element pair in turn, to thereby cause the elements to expand and contract in a circumferential sequence.

34. A pump according to Claim 32, the controller being adapted to generate signals having a selected frequency, the signals being applied to each element in the element pair having a phase difference of 180°.

35. A pump according to Claim 34, the controller being coupled to a DC power source to receive an input signal of up to 1000 V, the controller being adapted to generate signals of between 1 to 10000 V_{p-p} and a selected frequency of up to 40 MHz.

36. A fluid pump for pumping fluid, the fluid pump including:

a flow path;

a driver comprising:

a plurality of elements circumferentially spaced around the body and arranged in a plurality of layers; and

a plurality of electrodes arranged with respect to the layers of elements such that at least an intermediate electrode contacts adjacent surfaces of the layers of the elements and outer electrodes contact exterior surfaces of the layers of the elements so as to define a substantially tubular shaped body defining a body axis and wherein each element is responsive to a signal to cause a corresponding portion of the body to expand or contract in a direction substantially parallel to the tube axis, the driver being arranged in the flow path such that selective expansion and/or contraction of the body urges fluid along the flow path in use.